

«آگهی ارزیابی کیفی تامین کنندگان»

شرکت پالایش نفت امام خمینی (ره) سازند در نظر دارد کالاهای موضوع بند «یک» آگهی حاضر را از طریق برگزاری مناقسه عمومی دو مرحله‌ای از تامین کننده واجد شرایط خریداری و تامین نماید.

۱) موضوع مناقسه

الف) شرح مختصر کالا

ردیف	شماره مناقسه	شرح مختصر کالا	مقدار/تعداد	برآورد هزینه انجام موضوع مناقسه (ریال)	مبلغ تضمین شرکت در فرآیند ارجاع کار (ریال)
۱.	RND-9818225-MY (تجدید مناقسه)	کاتالیست ایزومریزاسیون	۶۴ متر مکعب	۱,۸۵۰,۰۰۰,۰۰۰,۰۰۰	۳۰,۲۰۰,۰۰۰,۰۰۰

ب) شرایط اولیه متقاضی

- ۱- داشتن شخصیت حقوقی، شماره اقتصادی، توانایی مالی، سابقه کار مفید و مرتبط با موضوع مناقسه.
- ۲- داشتن کد ملی/شناسه ملی جهت شرکت در مناقسه الزامی است.
- ۳- داشتن حسن سابقه و ارائه گواهینامه‌های مورد نظر از خریداران قبلی و اعلام اسامی خریداران قبلی در صورت لزوم.
- ۴- توانایی ارائه تضمین شرکت در فرآیند ارجاع کار (در صورت تائید در ارزیابی کیفی مناقسه‌گران) و همچنین تضمین انجام تعهدات (در صورت برنده شدن در مناقسه) مطابق آیین نامه تضمین برای معاملات دولتی موضوع تصویب نامه هیأت وزیران به شماره ۱۲۳۴۰۲/ت مورخ ۱۳۹۴/۰۹/۲۲.
- ۵- داشتن صورتهای مالی حسابرسی شده توسط سازمان حسابرسی یا اعضاء جامعه حسابداران رسمی، مطابق با ماده ۲ آیین نامه راهکارهای افزایش ضمانت اجرائی و تقویت حسابرسی، جهت مناقسه ردیف «۱» الزامی می‌باشد.

۲) نام و نشانی دستگاه مناقسه‌گزار

شرکت پالایش نفت امام خمینی (ره) سازند واقع در استان مرکزی، اراک- کیلومتر ۲۰ جاده بروجرد.

۳) مهلت و محل دریافت فرمهای استعلام ارزیابی کیفی

متقاضیانی که دارای شرایط اولیه (بند ب) بوده و آمادگی لازم جهت انجام مناقسه مذکور را دارند می‌توانند پس از انتشار آگهی نوبت دوم (۳ روز پس از انتشار آگهی نوبت اول) به مدت ۵ روز کاری ضمن ارسال تقاضای شرکت در مناقسه مورد نظر از طریق نمابر ۰۸۶-۳۳۶۷۲۰۱۳ و ۰۸۶-۶۱۶۲۳۶۶۰-۲۱ فرمهای استعلام ارزیابی کیفی را از پایگاه اینترنتی این شرکت به آدرس WWW.IKORC.IR دریافت و بر اساس آن مدارک لازم را تکمیل و صرفاً بر روی لوح فشرده (CD) به این شرکت تحویل یا ارسال نمایند.

۴) زمان و محل تحویل اسناد ارزیابی کیفی (تکمیل شده توسط متقاضیان)

زمان تحویل اسناد ارزیابی کیفی توسط مناقسه‌گران، ۲ هفته پس از آخرین مهلت ارسال تقاضای شرکت در مناقسه می‌باشد. ضمناً محل تحویل یا ارسال لوح فشرده (CD) حاوی فرمها و مدارک تکمیل شده، به نشانی اراک- کیلومتر ۲۰ جاده بروجرد- سه راهی سازند- شرکت پالایش نفت امام خمینی (ره) سازند- اداره تدارکات و امور کالا- ساختمان ب- طبقه همکف اتاق ۱۲۱- کدپستی ۴۱۱۱۱-۳۸۶۷۱-۴۱۱۱۱: تلفن: ۳۳۴۹۲۸۴۰ و ۳۳۴۹۲۹۱۶-۰۸۶ می‌باشد. بدیهی است به مدارک ارسالی بعد از مهلت مقرر ترتیب اثر داده نخواهد شد ضمناً دادن پیشنهاد و ارائه اسناد و مدارک هیچگونه حقی برای متقاضی ایجاد نمی‌کند. لازم بذکر است دستگاه مناقسه‌گزار پس از وصول لوح فشرده حاوی اسناد ارزیابی کیفی ظرف مدت ۱ ماه نسبت به اعلام اسامی واجدین شرایط اقدام خواهد نمود.

توجه: مناقسه‌گران نخست با مراجعه به سایت این شرکت (همزمان با انتشار آگهی نوبت دوم) می‌بایست ۲ برگ فرم ارزیابی کیفی را اخذ و پس از تکمیل به همراه مدارک مربوطه، صرفاً بر روی لوح فشرده (CD) درج و در موعد مقرر به آدرس این شرکت ارسال یا تحویل نمایند، این شرکت نیز پس از ارزیابی کیفی متقاضیان، از شرکتی که حداقل امتیاز قابل قبول را کسب نموده باشند، جهت دریافت اسناد مناقسه دعوت بعمل خواهد آورد.

توضیح: پیشنهاد می‌گردد شرکت‌های متقاضی در اسرع وقت نسبت به ثبت نام در سامانه تامین الکترونیکی کالای نفت (EP) اقدام نمایند.

روابط عمومی شرکت پالایش نفت امام خمینی (ره) سازند

WWW.IKORC.IR آدرس اینترنتی:

چاپ اول : تاریخ ۹۹/۰۸/۲۸ روزنامه اطلاعات

چاپ دوم: تاریخ ۹۹/۰۹/۰۲ روزنامه اطلاعات

• آخرین مهلت اعلام آمادگی توسط فاکس تا تاریخ ۹۹/۰۹/۰۸ میباشد و متعاقباً

شرکت‌هایی که اعلام آمادگی نمودند تا پایان وقت اداری روز دوشنبه مورخ

۹۹/۰۹/۲۴ مهلت دارند CD ارزیابی کیفی را بر اساس مدارک پیوست تحویل

نمایند.



شرکت پالایش نفت امام خمینی (ره) شازند (سهامی عام)

شرکت / فروشگاه محترم مناقصه عمومی دو مرحله‌ای شماره: RND-9818225-MY

لطفاً به منظور انجام ارزیابی کیفی آن شرکت / فروشگاه ، طبق جداول ومحاسبات پیوست مدارک ومستندات ذیل را ارائه فرمایید:

۱- جهت ارزیابی توان مالی

الف : مدارک مورد نیاز جهت ارزیابی حداقل یکی از موارد ذیل:

۱- الف : مالیات متوسط سالانه پرداخت شده (برگ تشخیص / قطعی مالیات عملکرد پنج ساله اخیر)

۲- الف : فروش یکسال گذشته (لیست خریداران شامل نام خریدار ، شرح کالا، مبلغ کالا)

۳- الف : اظهار نامه مالیاتی

۴- الف : حداکثر تأییدیه کتبی اعتبار از طرف بانکها

۵- الف : دارائیهای ثابت

۶- الف متوسط بیمه سالانه

۷- الف صورتهای مالی حسابرسی شده توسط سازمان حسابرسی یا موسسات حسابرسی مورد تأیید

تبصره : ارائه صورتهای مالی حسابرسی شده (بند ۷- الف) در خصوص معاملاتی که مبلغ آن بیش از ۱۰ برابر نصاب معاملات متوسط باشد الزامیست .

ب: نحوه ارزیابی و امتیاز دهی توان مالی :

(مالیات متوسط سالانه $\times 100$ / فروش یک سال گذشته / تأییدیه کتبی اعتبار بانکی) = RI برآورده = ES

امتیاز	فرمول
۱۰۰	$1/2 \times ES \leq RI$
۹۰	$ES \leq RI < 1/2 \times ES$
۸۰	$.8 \times ES \leq RI < ES$
۷۰	$.6 \times ES \leq RI < .8 \times ES$
۶۰	$RI < .6 \times ES$

۲- جهت ارزیابی حسن سابقه / مشتریان قبلی / تضمین کیفیت و تضمین خدمات محصولات مدارک ذیل مورد نیاز است :

الف : کیفیت کالای مورد نظر (ارائه مدارکی مبنی بر فروش کالای مورد نظر به خریداران / ارائه مدارکی مبنی بر تطابق مشخصات فنی ارائه شده از سوی فروشنده با کالای مورد نظر)

ب : ارائه استانداردها و گواهی تضمین کیفیت ساخت کالای مورد نظر فروخته شده (در صورت موجود بودن)

ج : ارائه مدارک مربوطه در خصوص دارا بودن نمایندگی

د : ارائه تأییدیه کالای فروخته شده

۳- جهت ارزیابی تجربی مدارک ذیل مورد نیاز است :

الف: ارائه اساسنامه شرکت یا پروانه کسب

ب : ارائه شماره اقتصادی / کد ملی



تاریخ:

شرکت بالایش نفت امام خمینی (ره) سازند (سهامی عام)
فرم ارزیابی کیفی تأمین کنندگان

مناقشه عمومی دو مرحله ای شماره: RND-9818225-MY نام شرکت:

تحت عنوان: خرید کاتالیست ایزومریزاسیون

A: توان مالی

ارزیابی بر اساس یکی از پارامترهای ذیل انجام می شود:

متوسط مالیات سالانه

اظهار نامه مالیاتی

درآمد / فروش سالانه

متوسط بیمه سالانه

تأیید کتبی اعتبار بانکی

دارائی های ثابت

میلیارد ریال

میزان توان مالی

صورتهای مالی حسابرسی شده: دارد ندارد

۱۰۰

۹۰

۸۰

۷۰

۶۰

امتیاز کسب شده:

حدافل امتیاز لازم:

B: ارزیابی مشتریان قبلی، حسن سابقه و تضمین کیفیت و خدمات محصولات

مورد تأیی نیست	بارامترهای ارزیابی		عالی امتیاز ۵	بسیار خوب امتیاز ۴	خوب امتیاز ۳
	مورد تأیی نیست	مورد تأیی نیست			

$(13 \div 15) \times 100 = 86.67$

امتیاز

سال تأسیس:

C: ارزیابی تجربی

امتیاز	سابقه	
۱۰۰	با بیش از ۱۰ سال سابقه	تولید کننده / سازنده کالا
۹۰	۵ سال تا ۱۰ سال سابقه	
۸۰	با کمتر از ۵ سال سابقه	
۸۰	با بیش از ۱۰ سال سابقه	تأمین کننده کالا
۷۰	۵ سال تا ۱۰ سال سابقه	
۶۰ <input checked="" type="checkbox"/>	با کمتر از ۵ سال سابقه	

امتیاز سازنده کالا: _____

امتیاز تأمین کننده کالا: ۶۰

اولویت معیارها:

۲	A
۱	B
۲	C

بر اساس ارزیابی مدارک فوق شرکت مذکور مورد تأیید می باشد

به دلیل عدم ارائه مدارک ذیل، شرکت مذکور مورد تأیید نمی باشد

۱- عدم ارائه مدارک مالی

۲- عدم ارائه مدارک حسن سابقه و ..

۳- عدم ارائه مدارک تجربه و سوابق مربوط

فرمول

$$\text{امتیاز} = \frac{1}{3} \cdot (A + C) + \frac{1}{3} \cdot B$$

$$21 + 35 + 14 = 70$$

امتیاز تأمین کننده کالا

مشخصات فنی و اطلاعات مربوطه:

مقدار درخواستی	واحد کالا	شرح کالا	ردیف
64	M3	ISOMERIZATION CATALYST	۱

اطلاعات تکمیلی پیوست می باشد:

- ۱- کاتالیست میبایست در بشکه های فلزی نو و استاندارد و بروی پالت تحویل گردد.
- ۲- فروشنده موظف است همزمان با بررسی پیشنهادات فنی، مقدار یک کیلوگرم از کاتالیست پیشنهادی خود را بعنوان نمونه کالا جهت انجام تست پایلوت در پژوهشگاه صنعت نفت و ... ارائه نماید و هزینه های تست پایلوت و ... بعهده فروشنده می باشد، همچنین شرکت برنده متعهد می گردد با یکی از شرکتهای مورد تایید وزارت نفت برای انجام بازرسی های مورد نیاز و نمونه برداری از خط تولید جهت تست های فیزیکی و شیمیایی مطابق با DATA SHEET سازنده کاتالیست قرارداد منعقد نماید که هزینه مربوطه بعهده فروشنده می باشد و میبایست مقدار یک کیلوگرم نمونه کاتالیست خط تولید نیز بمنظور بررسیهای مجدد در پژوهشگاه صنعت نفت ارسال که هزینه بررسی در پژوهشگاه صنعت نفت بعهده پالایشگاه می باشد.

Technical Specifications of ISOMERIZATION Catalyst **« RND-9818225-MY »**

- 1. Definition**
- 2. Introduction**
- 3. Prequalification Criteria**
- 4. Process Description**
- 5. Feed and products Specification**
- 6. Catalyst Performance**
- 7. Operating Constraints**
- 8. Scope of Services**
- 9. Evaluation Criteria**
- 10. Guarantees**
- 11. Penalties**

Section 1: Definition

- 1. Buyer:** shall mean Imam Khomeini Oil Refining Co. (hereinafter referred as IKORC), incorporated and existing under the laws at Islamic Republic of Iran is located at 20Km.BroojerdRoad-Arak-Iran.
- 2. Supplier:** shall mean any supplier/vendor who shall be responsible for supply catalyst.
- 3. ISOM: Isomerization unit is designed to process Light Naphtha received from the Naphtha Splitter in NHT2 to improve RON of light naphtha employing platinum catalyst to convert low quality light naphtha in the presence of hydrogen. The unit is designed for a capacity of 8500 BPSD of low octane hydrotreated light naphtha.**
- 4. Purchase order, P.O** means the binding agreement between buyer and catalyst supplier for the supply of Isomerizationcatalyst and additional services as described in the “Purchase order documents”.

Section 2: Introduction

The technical specification is being released for procurement of suitable catalysts for Isomerization Unit (ISOM) of Imam Khomeini Oil Refining Company. The feed basis, terms of reference, product yields & qualities, general description, constraints definition, scope of supply & services, performance guarantees and penalties etc. follow in the subsequent sections of the document.

The Product quality and yield pattern and RON of Isomerate to be submitted with the technical bid.

Imam Khomeini Oil Refining Company (IKORC) require 60 m³ of catalyst for Isomerization unit (ISOM), which was originally designed and licensed by RIPI (Research Institute of Petroleum Industry) with one reactor to process 8500** BBL/day of Light Naphtha and guaranteed Isomerate product RON (RON= Min. 86).

Bidders are required to submit 1 KG sample of Main/Active Catalyst to IKORC. The sample is required to be submitted before the due date of tender. Offer, without the sample is liable to be rejected.

****This amount of feed is based on design condition of the unit. RON & yield of the product for minimum 80 m³/h (12076 BBL/day) should be calculated and guaranteed by catalyst suppliers.**

Section 3: Pre Qualification Criteria (PQC)

1. The bidder should be original manufacturer of Catalysts for ISOM unit or official local agent and have supplied the catalyst anywhere in the world from 2015 onwards for ISOM unit with same type of catalyst.
2. The catalyst supplier shall provide references regarding successful and satisfactory performance of the offered same type of catalyst for the desired ISOM. units operating under similar conditions and same or better guaranteed performance in Iran or abroad. The reference catalyst must have completed minimum one year of successful operation. Reference details including the copy of the purchase order to be attached. Offers, without any reference of same type of catalyst are liable to be rejected.
3. IKORC may at its discretion seek the performance details of the supplier's catalyst(s) from end users with similar plants who are using the same catalyst(s), which is offered to IKORC. In the event of receipt of no satisfactory performance, the catalyst(s) offered will deem

to be technically disqualified and this offer will not be considered for further evaluation.

Section 4: Process Description

Isomerization unit is designed to process Light Naphtha received from the Naphtha Splitter in NHT2 to improve RON of light naphtha. Unit design capacity is 8500 BPSD. The unit turndown ratio is 50% of the design capacity.

There are two primary products from the unit:

- Isomerate routed to product storage.
- Stabilized LPG routed to product storage.

There are additionally:

- Stabilizer Deethanizer off Gas directly routed to the refinery fuel gas header.

ISOM consists of the following sections:

- (a) Reactor Section
- (b) Separation Section
- (c) Make –up hydrogen compressor.

Section 5: Feed and Products Specification

5-1-1 Feed Specification

a-Fresh Feed

The feedstocks of ISOM Reactor are Light Naphtha from the Naphtha Splitter in NHT2 and NC6 Recycle from Deisohexanizer column (Table 1, 2). Make-up hydrogen supplied from Octanizing and GHT Units (Table 3).

Table 1 -PROPERTIES OF ISOMERIZATION FRESH FEED *		
Source: Naphtha hydro treating unit (NHT2)		
Composition Data wt%	Design Condition	Actual Run**
N-C4	0	0.01
N- pentane	0	3.02
Isopentane	8.82	10.82
N-C5	15.02	17.23
2,2DMC4	4.15	0.32
CC5	5.63	1.47
2,3DMC4	3.67	1.48
2MC5	8.02	9.61
3MC5	4.95	7.29
N-C6	18.27	17.85
2,2DMC5	1.13	0.23
MCC5	13.89	5.52
2,4DMC5	0.43	0.68
2,2,3TMC4	0	0.02
Benzene	5.7***	2.27
3,3DMC5	0.06	0.15
CC6	9.88	4.07
2MC6	0.29	3.80
2,3DMC5	0.02	1.63
1,1DMCC5	0	0.39
3MC6	0.07	4.14
cis-1,3DMCC5	0	0.92
trans-1,3DMCC5	0	0.77
3EC5	0	0.32
Trance-1,2DMCC5	0	1.52
N-C7	0	2.97
MCC6	0	0.89
EthylCC5	0	0.07
Toluene	0	0.49
Total	100	99.95
N-Paraffins	33.29	38.06

محل مهر خریدار:

محل مهر فروشنده:

Isoparaffins		31.18	42.65
Aromatics		5.7	2.75
Naphthenes		29.4	15.63
Olefins		0.43	0.90
Total		100	100
Distillation Range , ASTM D- 86	IBP	...	45
	5%	...	49
	10%	...	52
	30%	...	57
	50%	...	61
	70%	...	65
	90%	...	71
	95%	...	75
	FBP	...	85
Total Sp. Gr		0.691	0.673
Molecular Weight, kg/kmol		80.76	...
Total Sulfur, ppm wt		<0.5	0.41
Total Nitrogen, ppm wt		<0.1	0.5
Viscosity, cP		0.2681	...
Water ppm		...	20
STD Volume Flow Rate, m3/hr		56.31	80.0 **

**** RON & yield of the product for minimum 80 m³/h(12076 BBL/day) should be calculated and guaranteed by catalyst suppliers. (All calculation and guaranties must be based on the actual unit conditions including the amount of feed and its components)**

***** Benzene content of the product should be calculated and guaranteed by catalyst suppliers based on the fresh feed's benzene content of design condition (5.7 wt%).**

b- NC6 Recycle

Table 2- NC6 Recycle from Deisohexanizer column *		
Item	Design Data	Actual Data
Tem. °C	96	97
Pressure, Barg	28.4	28
Total mass flow ,Kg/hr	34658	-
Molecular Weight, kg/kmol	85.55	-
STD Volume Flow Rate, m ³ /hr	50.12	20
Composition, wt%		
Cycloheptane	0.011332	0
22-Mbutane	1.009532	0
23-Mbutane	3.926236	0.34
2-Mpentane	21.02612	4.48
3-Mpentane	22.0655	10.51
N-Hexane	21.36678	37.07
2,2-Dimethylpentane	-	0.55
Mecyclopentan	25.35456	33.06
2,4-Dimethylpentane	0	0.56
Benzene	0.004507	0
Cyclohexane	5.235436	5.95
C7+	0	7.48
Total	100	100

5-1-2 Make Up Hydrogen

The make-up hydrogen for ISOM is supplied from the net gas compressor third stage discharge of Octanizingunit. The injection point of purified hydrogen is at the discharge of the recycle gas compressor.

Composition and specifications of the hydrogen is listed below:

Composition, mol%	Design Data	Actual Data
Hydrogen	94.49	94.84
Methane	2.02	1.86
Ethane	2.15	1.63
Propane	0.83	1.06
N-butane	0.16	0.2
I-butane	0.18	0.29
C5+	0.17	0.14
Total	100	100
Viscosity ,cp	0.01032	...

5-2 Products Specification

There are two primary products from the ISOM Unit, isomerate product and Stabilized LPG which are routed to storage tanks. In addition, off gas from Deethanizer and Stabilizer is sent to the refinery fuel gas header.

5-2-1 Isomerate

Specifications of product of ISOM unit (isomerate) are as follows:

Properties	Design Data	Actual Data
Composition Data wt%		
N-C4	0	0.06
Neopentane	0	3.18
Isopentane	25	18.08
N-C5	1	12.49
2,2DMC4	21	1.86
CC5	7	1.59
2,3DMC4	7	4.67
2MC5	22	17.80
3MC5	10	9.26
N-C6	2	8.11
2,2DMC5	0	0.38
MCC5	2	6.99

2,4DMC5	0	0.45
2,2,3TMC4	0	0.09
Benzene	0.13	0.00
3,3DMC5	0	0.29
CC6	2	4.02
2MC6		1.77
2,3DMC5	0	0.75
1,1DMCC5	0	0.32
3MC6	0	2.49
cis-1,3DMCC5	0	0.43
trans-1,3DMCC5	0	0.43
3EC5	0	0.21
Trance-1,2DMCC5	0	0.63
N-C7	0	1.34
MCC6	0	1.88
EthylCC5	0	0.26
Molecular Weight(kg/kmol)	80.89	82.56
RON	Guarantee 86	---
MON	Expected 85	-
Benzene Content	0.1 vol%	Nil
RVP	Max 80 kPa	77
YIELD	Guarantee 92 wt%	95

5-2-2 Stabilizer Deethanizer off Gas

The off gas from Stabilizer and Deethanizer will be directly routed to the refinery fuel gas header.

Flow rates and characteristics of the off gas are presented as follows:

Properties	Design Data	Actual run
Composition , mol%		
Hydrogen	14.9	14.55
Methane	10.3	8.46
Ethane	24.7	64.96

Propane	42.1	10.98
I-butane	5	0.888
N-butane	2.9	0.148
C5+	0.0	0.06
Total	100	100
Viscosity , cP	0.00956	...
Molecular Weight , kg/kmol	32.7	...
Flowing Density , kg/m ³	6.24	...

5-2-3 LPG Product

Table- 6 LPG Product Specification *		
Composition mol%	Design data	Actual run
Hydrogen	0	0
Methane	0	0
Ethane	0.0145	0.89
Propane	47.45	40.874
I-butane	25.54	36.596
N-butane	26.65	11.038
I-pentane	0.043	7.228
N-pentane	0.29	2.456
Total molar flow rate (kmol/hr)	68.91	...
Viscosity (cp)	0.11666	...
Molecular Weight (kg/kmol)	51.51	...
Flowing Density(kg/m ³)	514.5	555

***Difference between Design and Actual condition due to changing in crude oil feed, Suppliers must take samples from Isomerization FreshFeed,NC6 Recycle from Deisohexanizer column and shall analyze it by their laboratory.**

5-3 Design and operating conditions:

Table-7 Main Operation of Isomerization Unit					
Item	Design Condition	Actual Run	Item	Design Condition	Actual Run
Fresh Feed Rate, m ³ /h	56.31 *	80	Reactor Inlet Temperature, °C	220(SOR)/270(EOR)	240
Reactor Feed (Gas), m ³ /hr	3289	...	Max. Reactor Delta T, °C	30	24
LHSV, h ⁻¹	2	1.4	Reactor Outlet Temperature, °C	250(SOR)/290(EOR)	264
H ₂ /HC Ratio, mol/mol	1:2 (normally 1.05)	1.1	Recycle Gas Compressor (C-3301 A/B)		
Hydrogen Make up, Nm ³ /h	6214	2500	Suction Pressure, barg	21.7	22.5
Recycle Gas Flow, Nm ³ /h	21770	22500	Discharge Pressure, barg	29.8	27.3
Recycle Gas H ₂ Purity, mol%	82.5	93.67			
Make-up Gas H ₂ Purity, mol%	94.49	95.16			

**This amount of feed is based on design condition of the unit. RON & yield of the product for minimum 80 m³/h(12076 BBL/day) should be calculated and guaranteed by catalyst suppliers.*

5-3 Catalyst Loading:

Table 8-Catalyst loading	
Reactor	Volume of Catalyst, M ³
R-3301	60 (max)

5-4 Isomerization Heater:

Table 9- Isomerization Heater		
Heater	Max Duty , Kcal/h	Max Outlet Temperature °C
H-3301	3.2*10 ⁶	290

5-4 Inlet Pressure of Reactor:

Table 10- Inlet Press. of Reactors , kg/cm ²	
	Design
R-3301	25.8

Section 6: Catalyst Performance**6.1 Catalyst Requirement:**

Catalyst type and quantity must meet the following requirements:

1. Catalyst to handle fresh feed rate as mentioned in Section 5-1 and under actual operating condition and Operating Constraints (section 7) the guaranteed items of table 11 shall be met.
2. Catalyst offered should have proven commercial performance of minimum one year in operation.

6.2 Format for submission of yield guarantee:

Based on RIPI design and guarantee for increase Light naphtha octane to 87 RON of Gasoline and below items should be guarantee with suppliers.

Table-11 Guarantees Items	
Parameter	Guarantee
RON of Product	≥ 86
Benzene content on product	0.1% vol
RVP of product , KPa	Max. 80
Yield of Product, wt%	Min 92
Total life of Catalyst(min) , year	6

6.3 Catalyst life Guarantee:

The catalyst should be designed to meet the guaranteed quality, product yield, RON and specifications as per section 10 for a minimum period of 6 years operation while processing at feed specification as per section 5-1. Penalties as per section 11 will be applicable if the above is not met.

6.4 Performance Guarantee Test Run:

1-For establishing the above performance guarantees, test runs will be conducted either with design feed stock or feed stock having similar characteristics as those of design feed stocks. The performance guarantee test run for catalyst will be conducted within 6 months from the date of introduction of fresh feed after catalyst loading.

2. The catalyst will be accepted by IKORC only if the guarantees specified by the vendor & IKORC have been met in the PGTR (Performance Guarantee Test Run). Otherwise penalties shall be applicable as per the section 11.

3. Catalyst supplier shall provide details, any procedures, special conditions required for conducting performance guarantee run. The analysis obtained from IKORC laboratory shall be considered as final. These methods shall be in accordance with normal practice. (*No third party analysis is envisaged*).

4. The test run shall commence when the unit is operating under stable conditions and shall be conducted for a period of 72 to 168 consecutive hours based on feed availability. Based on mutually agreed and jointly collected measurements during the test run, Catalyst supplier and IKORC shall evaluate the results of the test run to confirm conformity with the performance guarantees.

7 Operating Constraints

Below operating constraints of ISOM unit to be considered by vendor while designing the catalyst and providing guarantees.

1. Max. Charge Heater Tube Skin Temp. is 520 °C
2. Maximum design heater outlet temperature is 270°C (End Of Run) (inlet temperature of R-3301)
3. Max. skin temp. of reactor at normal pressure 400 °C
4. Maximum recycle gas actual flow is 21.77 KNM³/hr.
5. Maximum C7+ content for design shall be 8.0wt% on total feed

8 Scope of services:

Vendor shall provide the following services:

8.1 Scope of Supply & Services

i) Supply of necessary catalyst.

ii) In price bid, the vendor has to quote total catalyst cost CFR bases.

iii) Vendor should assist by deputing expert during catalyst loading, start-up assistance and Performance Guarantee Test Run activities. IKORC requires approximately 10 days on site service (24 hrs basis) as part of catalyst proposal i.e. 3 days round the clock backup for catalyst loading and 7 days for start up and Test Run. Subsequent to the catalyst loading, vendor shall go back and come again during the start up. Above services must include all the travels, boarding, lodging, transport and miscellaneous allowances at vendor's scope. Vendor shall submit detailed catalyst loading, start-up and PGTR reports immediate after each activity. Time spent during transit will not be considered by IKORC.

iv) In case IKORC requires more than 10 days vendor's service for this activity, vendor to quote per diem rates in price bids for services needed at site, which will not be considered for evaluation of offers.

v) Vendor has to certify and sign various stage wise documentary clearances during catalyst loading and reactors box up after inspection.

vi) Catalyst supplier shall also provide a certificate of worthiness after the successful completion of the catalyst loading. (Prior to first start up with the catalyst).

vii) Vendor should provide operating parameters for other modes of operations (design & check cases).

viii) Vendor shall provide periodic evaluation of catalyst performance on quarterly basis for ISOM. unit and offer technical assistance for trouble shooting arising in the unit till the catalyst is in use even after the guarantee period exceeds. Necessary data enabling the above will be furnished by IKORC.

8.2 Data / Documents to be submitted with the offer

Following information shall be submitted as a part of the technical offer (as per the following table format, Table - 12):

a. Minimum Information to be furnished in the Technical Proposal is defined in this section. Metric system of units shall be followed for all information.

b. Catalyst wise : Name, Type, size, Density, Average bulk density, wt% metal of content, crushing strength, surface area, pore volume, Attrition loss, Crushing Strength, Loss on Ignition, the properties of catalyst with their standard method of measurement.

- c. Catalyst supplier shall submit all the details and technical information including data with respect to Process Guarantees, duly signed and complete in all respects, along with the offer.
- d. Catalyst supplier to provide both the estimated values and guaranteed values at SOR and EOR.
- e. Catalyst supplier shall provide necessary procedure and loading diagram for the loading of catalyst in ISOM's reactor.
- f. Catalyst supplier to provide information on the following key operating parameters at SOR/EOR, as a minimum, in the proposal for all cases.
- *Overall mass balance
 - *Reactor yield
 - *Temperature/Pressure at inlet and outlet of the Reactor
 - *Pressure drop across the Reactor
 - *Weighted Average Inlet Temperature (WAIT)
 - *Weighted Average Bed Temperature (WABT)
 - *The Recycle gas to oil ratio (H₂/HC)
 - *C₄+ Recovery Yield wt. (%)
 - *C₅ Activity wt. (%)
 - * C₆ Activity wt. (%)
- g. As the vendor will specify SOR / EOR inlet, WAIT & WABT temperature, they will specify catalyst deactivation rate at the design charge for the design feed.
- h. Vendor must quote catalyst quantity as packed basis in kg unit and mention volume in M³ unit.
- i. Catalyst should be able to handle turndown with fresh feed at 50% of design.
- j. Precautions, emergency procedures to be followed during start-up / normal operation / upsets / turnarounds.
- k. Information regarding catalyst poisons.
- l. Catalyst packing, handling, storage, loading & unloading procedure.
- m. Detailed Catalyst Performance monitoring calculations/procedure.
- n. Catalyst reaction chemistry.
- o. Reference list of units where the catalyst has been in operation. Catalyst without proven one year commercial experience is not acceptable.
- p. All necessary technical information or the operating parameters that affect the catalyst performance i.e. SOR & EOR conditions with respect to temperature, temperature rise, pressure drop, product yield, product quality etc.
- q. Signed Statement of Deviations as per the Tender documents.

- r. Vendor to note that catalyst will be loaded at a time determined by IKORC Guarantees will hold from the time whenever feed is introduced for the first time.
- s. Vendor to provide catalyst technical details/ Material Safety Data Sheet & manufacturers specification with the bid documents / Manufacturers certificate of analyses incorporating all properties given in the specifications for each batch supplied.
- t. Catalyst to be packed suitably in steel drums on heavy-duty pallets.
- u. Vendor to indicate the estimated variation in inlet Temp. WABT, WAIT, H₂/HC, C₄+ Recovery Yield wt (%), C₅ Activity wt. (%), C₆ Activity wt. (%) and product qualities with respect to change in design case feed properties.
- v. Vendor to provide their catalyst deactivation details/WABT (WAIT) curve with respect to time for design case.
- w. Vendor to mention the list of documents required by vendor from IKORC at various stages.

All of the following items should be included in the technical offer clearly:

Table 12-ISOM CATALYST INFORMATION			
MANUFACTURE	CATALYST NAME		
	COMPANY NAME		
	FACTORY ADDRESS & E-MAIL		
CATALYST CHARACTERISTICS			UNIT DATA
SOR TEMPERATURE @ 87 RON			°C
EOR TEMPERATURE @ 87 RON			
H ₂ / HC mol. RATIO (MIN)			Mol/mol
TOTAL LIFE			year
NO OF REGENERATION			
C4+ RECOVERY YIELD			wt. (%)
C5 ACTIVITY			wt%
C5 ACTIVITY			wt%
BENZENE CONTENT IN ISOMERATE			vol%
CATALYST PHYSICAL PROPERTIES*			
SHAPE			
DIAMETER			mm
SURFACE AREA			m ² /gr
PORE VOLUME			cm ³ /gr
BULK DENSITY			kg/m ³
CRUSHING STRENGTH			N
ATTRITION LOSS			wt%
LOI @ 900°C, 6 hr			wt%
CATALYST CHEMICAL PROPERTIES*			
ACTIVE METAL CONTENT			wt%
NITROGEN POISON LEVEL			ppm wt
SULPHUR POISON LEVEL			ppm wt
WATER CONTENT POISON LEVEL			ppm wt
TECHNICAL SERVICES (INCLUDING TRAINING AND TECHNICAL SUPPORT)			
PERFORMANCE GUARANTEE**			
USER REFERENCE LIST(COMPANY NAME & COUNTRY & YEAR & ADDRESS)***			

**Third party inspection certificate of the catalyst properties and delivery contents. The third party company must be approved by the refinery (IKORC) and all the*

محل مهر خریدار:

محل مهر فروشنده:

expenses of site visit, sampling and catalyst tests, before delivery to be included in the catalyst price.

***Catalyst supplier shall stand guarantee for yield, product specification, RON of product, Benzene content on product 0.1%vol throughout the life of catalyst.*

****If the suppliers do not submit the consumers list, removed from the tender and the bid will not be accepted.*

9 Evaluation Criteria

9.1 The commercially offer will be equal with the following formula (Table – 13) and each items score (Table 14):

$$L = (100 * C) / (100 - (i * (100 - t)))$$

L = equal price

C = offer price

t = technical privilege (for accepted must be $t > 70$)

i = coefficient effect (for catalyst $i = 0.4$)

Tender :ISOM Catalyst		Tender NO.:RND-9818225-MY			
No.	Criterion of technical assessment	Weight percent	Special	Description of details	Attached
1	OPERATING COST	15			
2	LIFE OF CATALYST	20	*		
3	PRODUCTIVITY OF CATALYST	50	*		
4	TECHNICAL SUPPORT	5			
5	REFERENCE LIST	10	*		
NO.	Description of details				Privilege
1	OPERATING COST				
	OPERATING COST including:1) inlet Reactors Temp. 2) H2/HC Ratio				Attached form
2	LIFE OF CATALYST				
	Catalyst Life including:1)No of catalyst's regenerations2)Total Life				Attached form
3	PRODUCTIVITY OF CATALYST				
	Quality & Productivity:1) RON of Isomerate2)C4+ Yield3) C5 Activity wt% 4) C6 Activity				Attached form
4	TECHNICAL SUPPORT				
	Technical Consulting: 1) Technical Support				Attached form
5	REFERENCE LIST				
	provide references regarding successful and satisfactory performance				Attached form
Obligations					
No.	Description				
1	Guarantee of Section 10				
2	Visit of vendors Factory at time of production				
Explanation:					
1- technical privilege is 70 (t > 70) min					
2- Coefficient effect for catalyst i = 0.4					
3- <i>Special criteria: the criteria that if not get fully privilege , offer not acceptable</i>					
4- The commercially offer must be equal with the following formula					
$L = (100 * C) / (100 - (i * (100 - t)))$					
L = equal price					
C = offer price					
t = technical privilege (for accepted must be t > 70)					

Table – 13 (Selection Criteria)

Table – 14 (technical privilege form)

Technical privilege :Attached form for ISOM Catalyst			
OBJECTIVE	EFFECTIVENESS (%)	SUB.OBJECTIVE	EFFECTIVENESS BASED ON OBJECTIVE (%)
OPERATING COST	15	INLET TEMPERATUR (SOR/EOR)	40
		H ₂ /HC	60
CATALYST LIFE	20	GUARANTEED CYCLE LENGTH (TOTAL LIFE)	90
		NO.OF REGENERATION	10
PRODUCTS	50	C4+ yield WT%	10
		C5 Activity WT%	8
		C6 Activity WT%	2
		OCTANE(X)BBL	80
TECHNICAL SUPPORT	5	TECHNICAL SUPPORT	100
REFERENCE LIST	10	REFERENCE LIST***	100

***** If the suppliers do not submit the consumers list, removed from the tender and the bid will not be accepted.**

9.2 Offer not meeting guarantees mentioned in the section 10 is liable to be rejected.

10 Guarantees

Catalyst supplied by the vendor shall be subjected to the following guarantee conditions:

IKORC expects following guarantees to be met by the catalyst vendor for fresh feed rate of 56.3 M³/hr. Minimum guarantees to be met for any feed specification within range mentioned in section 5-1and under actual operating condition and Operating Constraints (section 7) and the guaranteed items of table 11 shall be meet.

Materials shall be guaranteed against manufacturing defects, materials, workmanship and design for a period of first cycle life. Warranty for replacement of material / accessories should be provided free of charges at our premises. The above guarantee/warranty will be without prejudice to the certificate of inspection or material receipt note issued by us in respect of the materials.

10.1 Minimum Yield Guarantees:

Yield must be \geq Min 92% by wt.& Benzene content max0.1%vol., However vendor has to specify the estimated yield.

10.2 Minimum Product Quality Guarantees:

Product (Isomerase) must meet following minimum requirement quality:

i) RON \geq 86

ii) Aromatic Content of Gasoline, max0.1%vol

However vendor has to specify the estimated above qualities.

10.3 Turndown Guarantees:

The targeted guaranteed turndown ratio is 50% of design feed for the unit. The turndown test run shall be for a period of 48 hours on continuous basis of operation while producing on-specification products with design feedstock. As per IKORC prerogative, turndown capacity test run or minimum possible capacity test run shall be carried out. However, it will be carried out within 6 months of start up.

10.4 Pressure drop Guarantee:

i. Catalyst supplier has to provide the estimated pressure drop.

ii. Catalyst supplier has to give maximum Pressure drop guarantee in the reactors. Guarantee includes reactors internals also.

10.5 Catalyst life/Cycle length Guarantees:

i) Cycle length shall be minimum 6 years at design feed.

Notes:

i. As the Supplier/Vendor will specify SOR / EOR inlet temperature, WABT, WAIT temperature and pressure drop across the reactor, they shall specify catalyst deactivation rate/curve at the design case.

11 Penalties

Following penalties shall be applicable in the event of non-performance of the catalyst with respect to guaranteed performance and guaranteed life of the catalyst.

11.1 Product Quality:

Guaranteed Product quality has to be met for the range of feed specification mentioned in the section 5-1. In case of not meeting any of the products quality as guaranteed, penalty will be as follows

- i) For every 1 Octane Number (RON) decrease in product as guaranteed, 0.5% of total catalyst cost will be recovered.
- ii) For every 1% by wt decrease in yield as guaranteed, 0.5% of total catalyst cost will be recovered.
- iii) For every 0.1% vol of benzene in Isomerase product, 0.3% of total catalyst cost will be recovered.
- iv) For every 1 increase in RVP(Kpa) of product as guaranteed, 0.1% of total catalyst cost will be recovered

11.2 Turndown:

In case of not meeting turndown criteria, 5 % of total catalyst cost will be recovered.

11.3 Catalyst Properties:

ii) For every 0.05% decrease in Pt content as guaranteed, 0.5% of total catalyst cost will be recovered.

11.4 Performance Bank Guarantee (PBG)

For the purpose of recovery of penalty, vendor has to provide performance bank guarantee of 10% of total catalyst cost.

11.5 Total Failure of Catalyst

For any one of the following reasons, the catalyst is treated as 'total failure',

1. SOR overall WAIT, WABT is 5 Deg C higher than quoted by the vendor in the tender.
2. Following yield and product quality guarantees conditions at design charge 56.88M³/hr and feed specification range mentioned in 5.1.

i) Product yield is not achieved min 90 % by wt.

ii) Product (Isomerase)RON is not achieved 84.

iii) Benzene content in product more than 0.5 vol%

3. for 0.15% by wt decrease in Pt content as guaranteed.

4. Restricts the continued operation of the unit at 106.44 m³/hr (inlet of reactor) reasons attributable to catalyst.

This will be assessed during Performance Guarantee Test Run (PGTR). If the catalyst is observed to be a 'Total Failure', Vendor will be given a maximum of one month from the last date of PGTR to correct the failure. Vendor will be allowed one more PGTR at the end of maximum one month to prove the performance of catalyst. If second PGTR also proves to be unsuccessful and the catalyst is a 'Total failure', vendor has to reimburse the CFR cost of entire catalyst in the form of credit note valid for a period of one year which will be used for any purchase made by IKORC from the same vendor during the period of validity. In case of no such purchase transaction, IKORC will cash the credit note.

11.6 Catalyst Life/Cycle length Guarantees liability:

The catalyst life will be evaluated during the cycle length. For any reduction in the life, the vendor has to repay the money equivalent to the cost in accordance with the formula given below.

i. If it fails within one year, cost equal to total catalyst cost.

ii. If it fails after one year the value shall be calculated in accordance with the below formula.

$$\text{Cost to repay} = (G * F - A) * C / (G * F)$$

Where

G = first cycle guaranteed life (5 years)

F = Design Feed (MT/year)

C = CFRc price of catalyst

A = Actual feed processed till failure (MT)

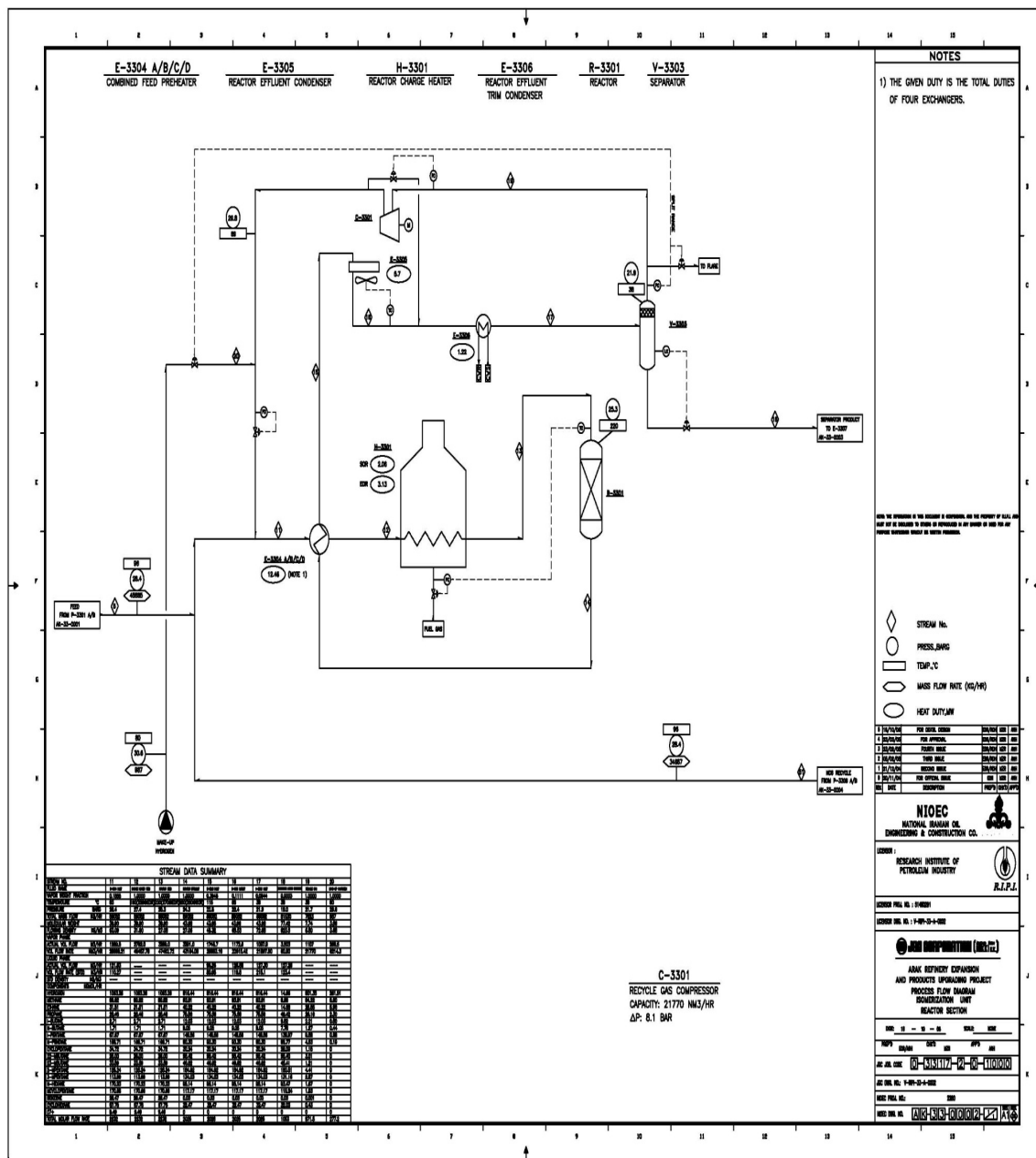


Figure 1-ISOM.unit Reactor

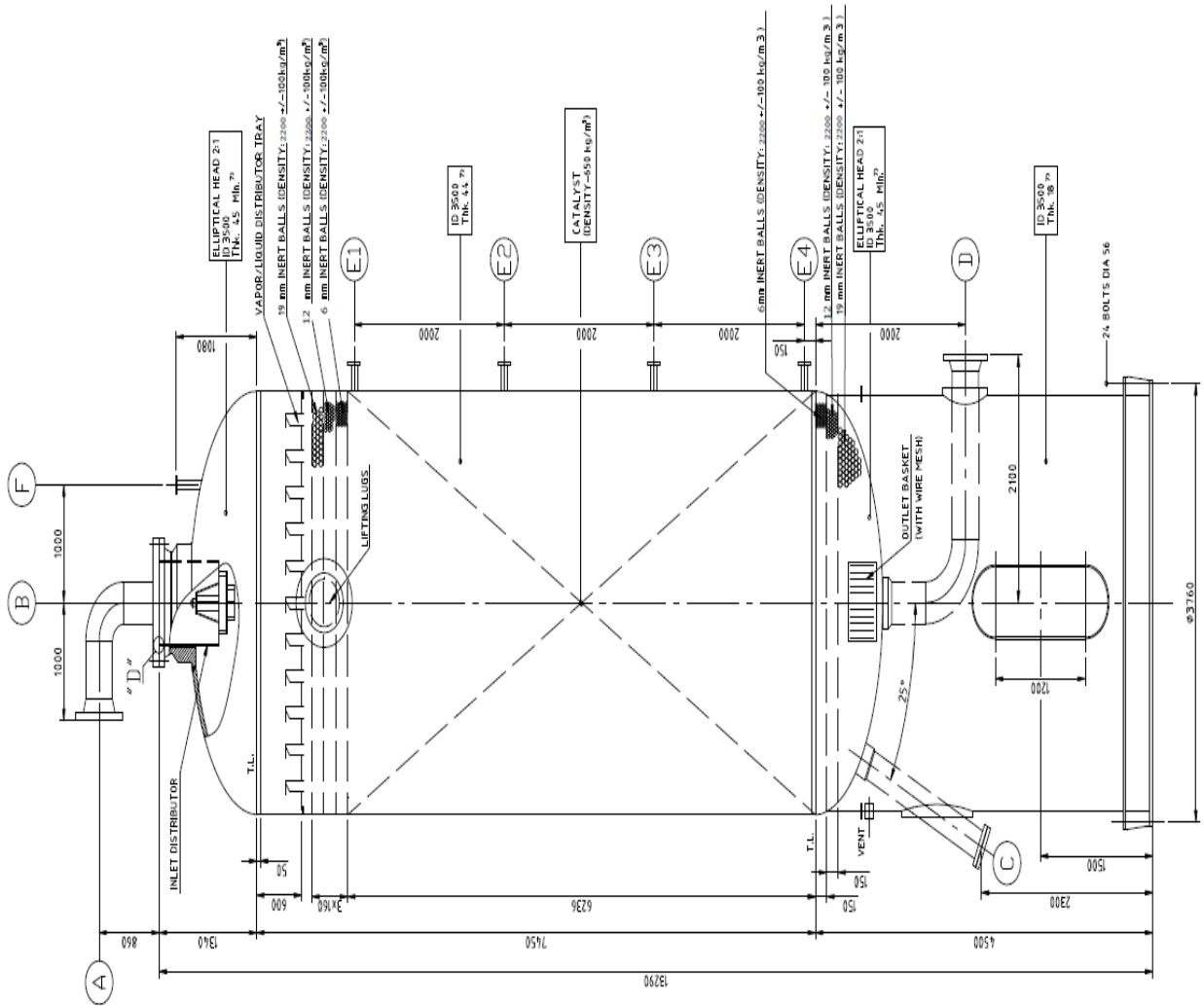


Figure 2-ISOM Reactor Specification

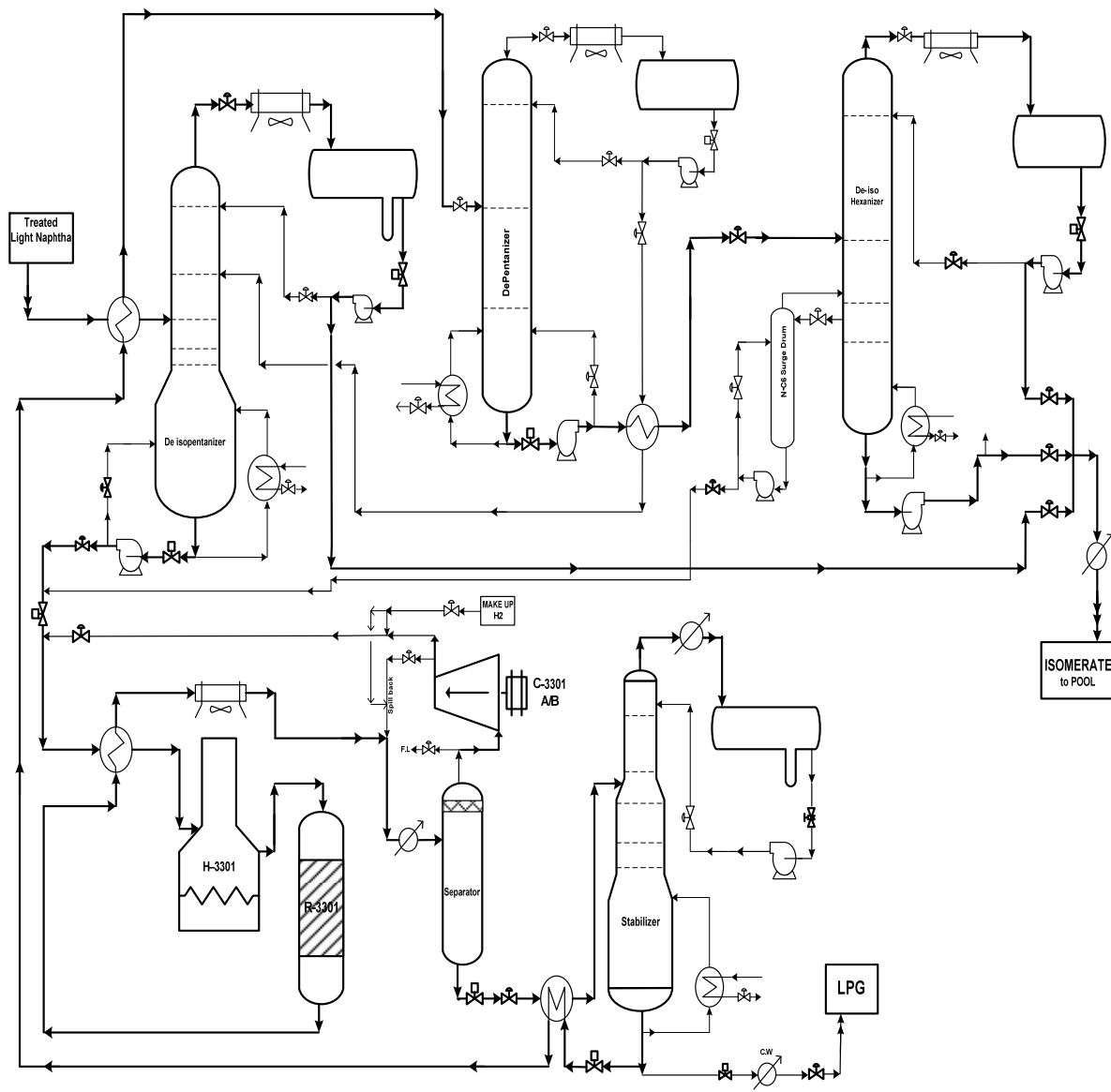


Figure 3-ISOM. unit